East Durham Open Space Plan

Preliminary Draft

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Durham City-County Planning Department

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Cover Photos

Leatherwood (*Dirca palustris)*
Little Lick Creek, East Durham County
Osprey (*Pandion haliaetus*)
Tobacco field and barn, East Durham County

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I. Introduction

The term "open space" has different meanings for different people. For the purposes of this Plan, open space includes areas with cultural and natural resource values, farmland, parkland, greenway trails, and rural landscapes. These undeveloped areas enhance the quality of life in any community by protecting water quality, providing residents with places to recreate for wellbeing and fitness, and protecting the biological diversity of irreplaceable landscapes.

Lick, Little Lick, and Panther, Creeks are tributaries to Falls Lake, a drinking water supply for the City of Raleigh, and drain almost 55 square miles in east Durham in the Upper Neuse River Basin. In general, these watersheds are bounded to the north by East Geer Street and to the south by Angier Avenue and Leesville and Carpenter Pond Roads. The headwaters of these creeks drain a portion of the City of Durham comprised primarily of older urban development as well as new suburban and rural landscapes farther to the east (See Map 1, Regional Context and Map 2, East Durham Basins).

Historically, the watersheds of Lick, Little Lick, and Panther Creeks were characterized primarily as rural with a number of large cattle farms as well as tobacco and horse farms. Over the past ten years, the Little Lick Creek watershed has experienced a dramatic increase in suburban development. The Lick and Panther Creek watersheds are also experiencing pressure for new suburban development. Open space will continue to disappear as a result of development pressure without an effective plan of action to protect these critical resources.

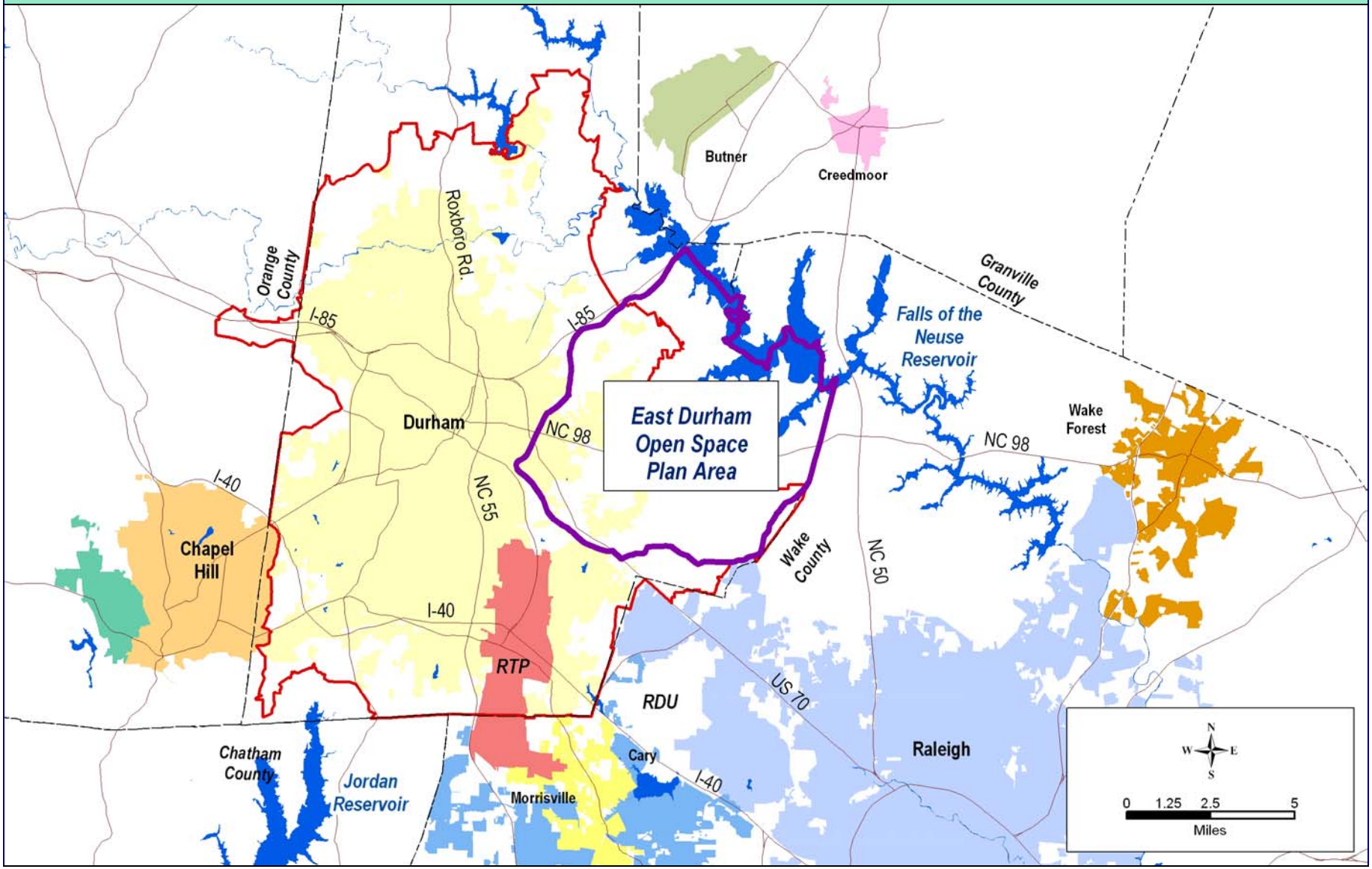
A. The Benefits of Open Space

- Preservation of open space is the only way to maintain significant habitat for wildlife.
- Open space, especially wetlands and wooded buffers located adjacent to waterways, filters runoff and associated pollutants.
- As traffic conditions and air pollution continue to deteriorate, encouraging alternative modes of transportation has become imperative. Multiple use trails within greenways connecting

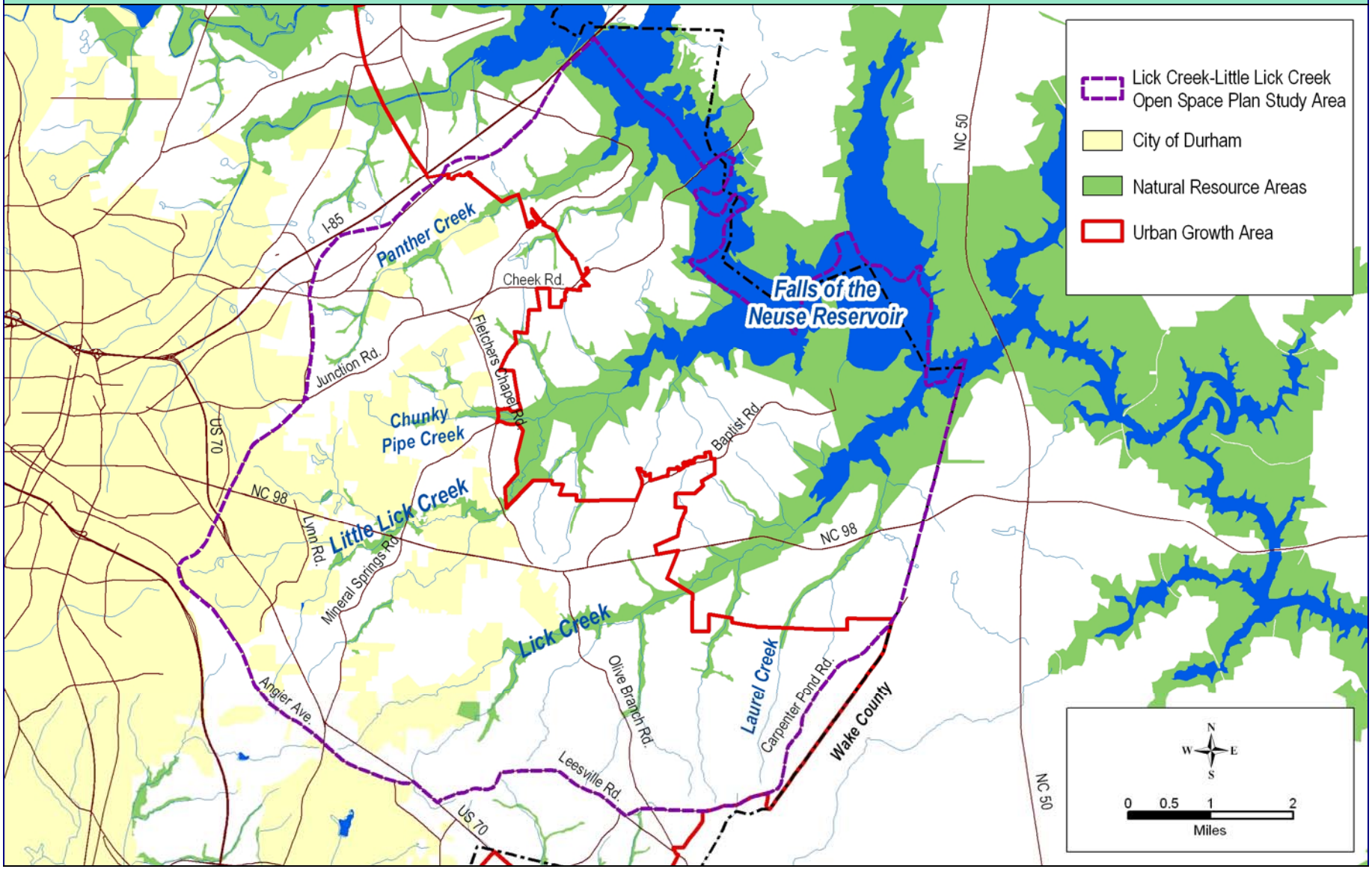
neighborhoods to schools, work places and shopping centers provide another transportation option for the community.

- Open space includes not only natural resources but resources that exemplify the heritage of our region. These cultural resources can include historic home sites, churches, and cemeteries; Native American sites; Civil War sites; and old mills.
- Open space protects the rural character and landscapes of a region that would otherwise be lost to subdivisions and shopping centers.
- The preservation of open space provides educational opportunities in a variety of fields of study including botany, zoology, geography, geology, and history.
- Preservation of FEMA designated flood plain areas and other flood prone areas helps provide relief from property damage as a result of large amounts of rainfall.
- In an age of shortened leisure time, there is an increasing demand for recreational opportunities that are close to home and work. An interconnected open space network of greenway trails, natural areas, as well as community and neighborhood parks is crucial to meeting the public's demand for these opportunities.
- Open space improves the overall quality of life of a community by maintaining a healthier environment and cleaner water as well as providing recreational opportunities.

Map 1, Regional Context



Map 2, East Durham Drainage Basins



II. Existing Conditions

A. Water Quality

Human activities in any type of land use can negatively impact the quality of surface waters such as streams, rivers, and lakes if the sources of pollution are not managed properly. Pollutants that enter our waters are categorized as point sources and non-point sources. Point sources of pollution are directly discharged to surface waters through a pipe. Non-point sources result from a broad range of land use activities and are transported to surface waters by rainfall and snowmelt. Some typical non-point sources of pollution include sediment, nutrients, fecal coliform bacteria, heavy metals, and oil and grease.

Examples of Non-Point Sources

- Construction activities;
- Existing impervious surfaces such as roads, parking lots, and rooftops;
- Failing septic systems;
- Agriculture; and
- Clear-cut timber harvesting.

The North Carolina Division of Water Quality (DWQ) has assigned all surface waters a classification that defines the best uses to be protected within these waters (for example swimming, fishing, drinking water supply). The classification of surface waters is one tool that state and federal agencies use to manage and protect surface waters in North Carolina. Classifications are designed to protect water quality, fish and wildlife habitat, the free flowing nature of a stream or river, or other important characteristics.

Examples of Point Sources

- Municipal wastewater treatment plants;
- Industrial wastewater treatment plants; and
- Small package wastewater treatment plants.

A stream, river, or lake may have several classifications applied to the same area. Lick, Little Lick, and Panther Creeks are classified as Water Supply IV (WS IV) and Nutrient Sensitive Waters (NSW). Surface waters protected as sources of potable water in moderately to highly developed watersheds are classified as WS IV. The NSW classification is a supplemental classification intended for waters that need additional nutrient management as a result of excessive vegetation growth. Management strategies to control point and non-point sources of nutrients are required in these drainage areas. Since Lick, Little Lick, and Panther Creeks are tributaries to a water supply reservoir, they have designated Critical Areas adjacent to Falls Lake. Critical Areas include that area adjacent to a water supply intake or reservoir where risk associated with pollution is greater than from the remaining portions of the watershed.

The DWQ monitors a number of chemical, physical, and biological parameters to determine how well a particular stream or lake supports its

uses and then rates the surface water as "supporting" or "impaired". Little Lick Creek (7.8 miles) and Lick Creek (7.2 miles) from their source to Falls Lake are rated as "impaired" because the streams are not sufficiently supporting aquatic life. In addition, Little Lick Creek has consistently had problems with low dissolved oxygen levels. The DWQ has not begun monitoring Panther Creek. The City of Durham Storm Water Services has been intensively monitoring Little Lick Creek since 2000, and their data support the DWQ rating of "impaired" for aquatic life. Durham Storm Water Services began monitoring Lick and Panther Creeks in 2004 (DENR, 2002), and preliminary results indicate relatively low biological diversity in both of these creeks. Durham Storm Water Services will be working with the DWQ to develop appropriate benthic macroinvertebrate criteria for Triassic Basin streams since the general benthic criteria for the Piedmont are probably not appropriate within this particular geologic region.

Benthic Macroinvertabrate Monitoring

The condition of aquatic life is measured by the diversity of aquatic organisms or benthic macro-invertebrates that live in and on the bottom of streams. These aquatic organisms are sensitive to subtle changes in water quality and, as a result, are reliable monitoring tools. The types and diversity of aquatic organisms present in a stream can provide important information on the overall health of a stream.

Currently, there are no discharges from wastewater treatment plants into Lick, Little Lick, and Panther Creeks. The City used to operate a wastewater treatment plant on Little Lick Creek, but that facility was converted in 1994 to a pump station to pump wastewater out of the basin. According to the Durham County Environmental Health records, there are 439 discharging sand filter systems that may require permits in the Little Lick watershed. The DWQ has been inspecting these systems and issuing permits, requiring homeowners to install chlorinators or other means of treating effluent. So far, permits have only been issued for 56 systems in this watershed. Preliminary results indicate that discharging sand filter systems may also be a significant source of pollutants in Panther Creek and much less of a problem in Lick Creek. In addition, the state has been issuing permits for wastewater collection systems since sanitary sewer overflows from the city-maintained portion of these systems are considered to be point source discharges. From 2001-2004 there have been 12 sanitary sewer overflows within the Little Lick watershed (Durham Storm Water Services). The DWQ has targeted Lick and Little Creeks for further intensive study to try and determine more specifically those factors contributing to poor water quality. Little Lick Creek has also been targeted by the state's Ecosystem Enhancement Program (EEP) for an additional watershed study to identify strategies to improve water quality.

B. Little Lick Creek Local Watershed Plan

The Upper Neuse Basin Association, Center for Watershed Protection, Durham City Storm Water Services, and Durham Planning Department are in the process of developing a Local Watershed Plan for Little Lick Creek. Support for this effort comes from the State's EEP, the DWQ, and the U.S. Geological Survey. The objectives of the Little Lick Creek Local Watershed Plan are to:

1. Evaluate current watershed conditions.

2. Analyze possible causes of stream impairment.
3. Predict future water quality degradation in the watershed.
4. Identify management strategies for restoring water quality and preventing future degradation.
5. Conduct additional water quality monitoring to address gaps in data.
6. Assist stakeholders involved in the process to implement the plan.

C. Clean Water Management Trust Fund

The Durham County Soil and Water Conservation District has applied to the state's Clean Water Management Trust Fund (CWMTF) for a grant to restore approximately 1,400 linear feet of Lick Creek immediately downstream of Olive Branch Road. To date, the CWMTF has approved funding for $97,000 that will be used for the design of this project. The remaining $292,500 of the total requested in the application for construction and monitoring will likely be approved at a later date.

This restoration project is located at a DWQ benthic macro-invertebrate sampling site where impacts from sediment have been a concern since 1995. Vertical stream banks are collapsing into the stream channel contributing large amounts of sediment to Falls Lake. The watershed in the immediate project area is primarily forested with relatively small agricultural fields and subdivisions. Upstream of the project, the watershed is more developed and is currently under heavy development pressure.

A primary goal of this project involves stabilizing the eroding channel using only natural materials as well as re-establishment of a forested buffer adjacent to the stream. This effort provides a start for the restoration of water quality in Lick Creek that will ultimately require the implementation of a number of practices in the watershed. In addition, the restoration site provides an excellent opportunity to educate landowners, local leaders, and other agencies as well as promote complimentary sediment control measures in the watershed.

D. Geology, Soils, and Topography

The entire watersheds of Lick, Little Lick, and Panther Creeks are found within the Triassic Basin. Formed approximately 200 million years ago, the Triassic Basin is comprised of primarily sedimentary rocks such as shales, sandstones, mudstones, and siltstones. As a result, the soils have low permeability inhibiting infiltration and promoting excessive surface runoff during rainstorms. Triassic soils are also especially subject to erosion, so sedimentation is often a concern in Triassic Basin streams. Diabase igneous intrusions are found within the sedimentary soils of the Triassic Basin. These intrusions are more

resistant to erosion than Triassic soils providing a source of rock that would otherwise be absent in Triassic Basin streams.

With easily eroding soils, local relief and elevations are often less than surrounding areas. Topography is gently rolling and stream valleys that cross the region are generally broad and flat. These broad floodplains indicative of the Triassic Basin are created by the migration of streams over millions of years (USEPA, 2002).

E. Wildlife Habitat and Natural Heritage

Prior to the impoundment of the Neuse River in 1983, Lick, Little Lick, and Panther Creeks fed directly into the upper reaches of this river. Since that time, these creeks empty into Falls Lake, a body of water surrounded by over 5,000 acres of land owned by the U.S. Army Corps of Engineers. The Corps lands are leased to the State of North Carolina and managed by the NC Wildlife Resources Commission as game lands as well as the NC Division of Parks and Recreation for Rolling View State Recreation Area.

Bottomland hardwood forests along the lower reaches of these creeks still provide refuge for at least some species of forest interior animals. Among the notable bird species in these lower reaches are bald eagles (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*). In addition, the continuity of wildlife habitat around the edge of Falls Lake provides a means for terrestrial wildlife passage between the upper and lower portions of the Neuse River Basin. Waterfowl habitat is provided by an impoundment on the headwaters of Little Lick Creek south of NC 98 and west of Sherron Road. This impoundment was constructed as mitigation for the loss of waterfowl habitat resulting from the creation of Falls Lake.

Falls Lake itself fragments habitat for aquatic species such as fish and mussels that can no longer move from the upper reaches of the Neuse River below the dam. When populations become "fragmented" or isolated from one another, the remaining populations are more vulnerable to being extirpated by environmental stressors.

Information regarding the most significant habitat and species within the east Durham creek corridors was obtained from the *Durham*

Interior and Edge Species

Interior species require large areas of forested land with minimal disturbance from roads, power lines, and subdivisions. Box turtles, barred owls, scarlet tanagers, wild turkeys, red-shouldered hawks, and bobcats are all examples of forest interior species.

Edge species of wildlife can thrive in areas that are a combination of smaller areas of forested land interspersed with pastures, yards, roads, and sewer easements. Raccoons, opossums, cardinals, blue jays, red-tailed hawks, and deer are all considered edge species.

Source: *Little River Corridor Open Space Plan*, 2001.

Table 1, East Durham Inventory Sites

Sites	Zoological Significance	Botanical Significance
Falls Lake/Neuse River Corridor		
Falls Lake Shoreline and Tributary Bottomlands		
B2, Falls Lake Shoreline	National	Regional
B3, Little Lick Creek Bottomlands	National	Regional
U5, Skypark Upland Forest	National	State
Lick Creek Bottomlands		
LK1, Upper Lick Creek	County	State
LK2, Middle Lick Creek Bottomlands	County	State
LK3, Lower Lick Creek Bottomlands	County	State
LK4, Leatherwood Cove	County	State

Note: Source is *Durham County Inventory of Important Natural Areas, Plants, and Wildlife*, Fall 1999.

County Inventory of Important Natural Areas, Plants, and Wildlife. The *Inventory* identifies 34 sites within nine river and creek corridors in Durham County that provide habitat for a high diversity of plant and animal species, support populations of rare plants and animals, or serve as critical corridors for animal movements. Based on diversity and rarity criteria, sites are ranked as significant at the national, state or regional level. The seven Falls Lake/Neuse River Corridor Inventory sites are shown in Table 1, East Durham Inventory Sites and on Map 3, Natural Heritage Inventory Sites.

The *Inventory* does not contain a description of habitat within the Panther Creek corridor. Most of the headwater areas of the Little Lick Creek drainage have been developed with only relatively narrow stream buffers left in tact. The portion of this creek on Corps of Engineers property contains a mature bottomland hardwood forest. When this site was originally surveyed in 1994, Douglass bittercress (*Cardamine douglassi*), a species state-listed as "significantly rare" as well as leatherwood (*Dirca palustris*), a species on the North Carolina "watch list" were found. The presence of these species indicated that the site was still relatively intact with a good diversity of plant species.

In contrast to Little Lick Creek, the forests within the watershed of Lick Creek are still relatively intact. They contain stands of bottomland hardwood forests that are among the most mature and diverse in the southeastern portion of Durham County. While the area in public ownership along Falls Lake will remain protected, the headwater areas on private property are under threat of development. The most significant species that was found in the lower portion of the Lick Creek bottomlands in 1990 was the four-toed salamander (*Hemidactylium scutatum*), a species state-listed as "special concern." The continued existence of this species will depend upon the area remaining free from disturbance such as logging. In addition to the high diversity of breeding birds recorded along Lick Creek, four species of permanent residents of large woodland tracts were also surveyed including: red-shouldered

hawks (*Buteo lineatus*), barred owls (*Strix varia*), hairy woodpeckers (*Picoides villosus*), and pileated woodpeckers (*Dryocopus pileatus*). Although historically Lick Creek supported Carolina darters (*Etheostoma collis*), another animal species state-listed as "special concern", it is unlikely that this fish could survive within the degraded aquatic habitat of Lick Creek

Middle Lick Creek Bottomlands (96 acres) and Lower Lick Creek Bottomlands (65 acres) are both Registered Natural Heritage Areas on Corps of Engineers property. Both sites contain the rare plants Douglass' bittercress as well as leatherwood. The forest within Middle Lick Creek Bottomlands is characterized as young to middle-aged whereas the Lower Lick Creek Bottomlands is more mature with a greater diversity of tree species.

On the east side of Laurel Creek, a former tributary to Lick Creek prior to the impoundment of Falls Lake, a natural area referred to as Leatherwood Cove is found. For obvious reasons, this site contains leatherwood as well as Douglass' bittercress. The site is also unique for having five species of hickory including southern shagbark hickory (*Carya carolina* var. *septentrionalis*), mockernut hickory (*Carya tomentosa*), pignut hickory (*Carya glabra*), northern shagbark hickory (*Carya ovata*), and bitternut hickory (*Carya cordiformis*). This extensive undisturbed area of 140 acres is on private property and is, therefore, under potential development threat.

1. Definitions

a. **"Significantly Rare" plant species** generally only have 1-20 populations remaining in the state and are usually substantially reduced in numbers by habitat destruction. These species are also typically more common somewhere else in their ranges, occurring mostly in habitats that are unusual in North Carolina.

b. **"Watch List" plant species** are believed to be rare but do not warrant active monitoring at this time.

c. **"Special Concern" animal species** are those species native to North Carolina that are determined by the Wildlife Resources Commission to require monitoring but may still be taken under certain regulations.

d. **Registered Natural Heritage Areas** involve the voluntary listing of property with the state's Natural Heritage Program. The listing is a nonbinding commitment to preserve the ecological integrity of the natural area.

F. Farmland Preservation

The Durham County Farmland Protection board administers Voluntary Agricultural Districts (VADs) in order to preserve farmland. (See Map 4, Farmland Preservation). The program was approved by the County Board of Commissioners in 1996 to encourage farmers to keep their land in agriculture. As the county continues to be developed, the

importance of maintaining a variety of open spaces including farmland has gained momentum in Durham County.

To qualify for this program, farmers must have at least 20 acres of land and agree to forego developing their property for 10 years, although farmers can cease to participate at any time. In return, the farmers receive a sign identifying the farm as a VAD as well as the right to a public hearing before land is condemned for landfills or other governmental projects. Most important, farmers are exempt from paying assessment fees when water and sewer lines are extended across their lands.

At present, two east Durham farms participate in the VAD program. Facing a bill from the city for a water and sewer extension, the Chandlers enrolled their 85-acre cattle farm in the VAD program. This picturesque piece of property along Stallings Road and Little Lick Creek has been farmed by Mr. Chandler for over 60 years. Mr. Bunnie Finch enrolled a 21-acre tract along Cheek Road in the VAD program. This tract of land is farmed primarily for tobacco.

Another tool for farmland preservation is the present use taxation program. Land that is used for agricultural production can be taxed at a rate for agricultural land even if its actual market value is higher, saving farmers money on property taxes. One of the requirements for participating in the VAD Program is that the land has to qualify for the Agricultural Present Use Value. In Durham County, present use tax value is applied to about 8,570 acres in 176 parcels. About 30 percent of the land under present use value is for agriculture, while the remaining is for forestry.

In addition to the Chandler and Finch farms, there are still a number of tobacco farms in this part of Durham County. These farms are scattered throughout the east Durham area on Sherron, Olive Branch, Holder, Leesville, Cheek, Patterson, and Carpenter Pond Roads. Triple Crown Farm is a large horse farm along Highway 98; and a new dairy farm operation is underway on Kemp Road.

G. Historic and Cultural Resources

1. Homes and Churches

Historic homes and churches are scattered throughout the east Durham watersheds, providing a glimpse into the past of former lifestyles and prominent families in this area (See Map 5, Historic Resources and Cemeteries). The most significant of these historic buildings are currently on the Study List for the National Register and are highlighted below. Refer to Appendix A for a comprehensive list of historic properties as well as descriptions of the architectural details of these buildings (where available). The information contained in Appendix A is taken from the *Durham County Historic Architecture Inventory* and the *Durham County Historic Inventory*.

a. Dr. William Norwood Hicks House

This well preserved house was completed just prior to the Civil War (circa 1860) by a physician in the Confederate Army who allegedly manufactured patent medicine at this site. Residential development has since sprouted up all around this historic residence making it barely detectable amongst all of the much more contemporary homes along Mineral Springs Road.

b. Fendel Bevers House

The Fendel Bevers House sits along Leesville Road, formerly a major route between Raleigh and Hillsborough. This circa 1850 structure represents what is now Durham County's most well preserved I-house (two rooms wide and one room deep) with Greek Revival styling.

c. Jones House

Passersby on Carpenter Pond Road cannot miss this intricately ornamented and brightly painted, large, wood-frame house. Constructed by the Jones Family in circa 1900, the ornamentation gives this house a distinctly Victorian appearance. Charley Sandling, a tobacco farmer and miller, added the long wrap-around porch in circa 1920.

(Photo by Cherri Smith)

d. John Nichols House

The John Nichols House was built in circa 1812 making it one of the oldest remaining houses in Durham County. Even more unusual is the fact that this house has remained in John Nichols' family-by-marriage since that time.

e. Joseph Holloway House

When Joseph Holloway married in the middle 1880's, he built an impressive two-story home on the foundation of an earlier dwelling that had burned. This house is distinguished from the typically less ornate Durham County farmhouses of the same time period by the incorporation of a wealth of Italianate architectural details.

2. Fish Dam Road

The original Fish Dam Road began as a foot trail in the 1600s and connected an Indian village on the Neuse River and one on the Eno River. Settlers later used the route of this trail to travel by horses, mules, and wagons between eastern Durham County and Hillsborough in Orange County. This route became known as Fish Dam Road because the Indians living along the Neuse River used the shallow water to make a giant fish trap. A portion of this historic road traverses the study area crossing Redwood Road and Panther Creek and continues in a generally western direction until reaching the Eno River in Hillsborough. Carver Street and US 70 east of Hillsborough are modern roads that follow the route of Fish Dam Road.

Joe Liles, an art instructor at the NC School of Science and Math, has become a local expert on Fish Dam Road. Locating undisturbed remnants of the old road bed in the woods in Durham and Orange Counties has become a popular student project for successive years at this school. As interest has grown regarding the road, the school project became the subject of the 2005 Eno River Association calendar.

3. Pre-Historic Cultures

North Carolina has been inhabited by human beings for over 12,000 years and has experienced several major changes in the cultural traditions of these residents. Although our knowledge of prehistoric cultures in Durham County is limited, most of what is known in the Falls Lake Tributaries study area is found from archaeological studies performed for Falls of the Neuse Reservoir as well as studies required as part of development proposals.

Prehistory dates back from 1540 and is divided into generalized time periods. The first indisputable evidence of human occupation in the Southeastern United States is during the Paleo-Indian period from approximately 10,000 to 8,000 B.C. Although little is known about the life of these people, it is believed that they were highly mobile hunters with a subsistence strategy based on large migratory animals, such as mastodons. The Archaic period is divided into Early, Middle, and Late Archaic time periods. The Early Archaic period, circa 8,000 to 6,000 B.C., is marked by the end of the glacial climate and the extinction of numerous large animals. By the Late Archaic period dating from circa 3,000 to 800 B.C. some groups were living for long periods of time in one location laying the foundation for the establishment of villages in later periods. The Woodland period from 800 B.C. to 1,000 A.D. is characterized by the appearance of farming as well as the development of complex tribal, chiefdom, and other political forms. The last part of the prehistoric period was marked by extensive epidemics among the Native American populations along with increasing Euro-American intrusions.

Evidence of prehistoric cultures can be found throughout the Falls Lake Tributaries study area. Most of the documented sites are scattered and isolated finds from the Archaic period consisting of a chip or piece of stone flaked off during tool manufacture or an isolated arrowhead. One archaeological site at the site of the Little Lick Creek Impoundment is eligible to be on the study list for the National Register of Historic Places. Those sites not eligible for the National Register are still significant for the information they may contain about Durham's little know earliest inhabitants.

H. Recreation Facilities and Greenways

1. Parks

The City of Durham owns and manages two community parks within the Lick and Little Lick Creek watersheds (See Map 6, Park Facilities and Trails). Community parks are typically 20-50 acres in size

and draw most of their users from the community within a two to three mile radius. C.R. Woods Park is 17 acres and offers play equipment, restrooms, and sport fields to the surrounding community. Approaching 50 acres in size, Twin Lakes Park offers play equipment, restrooms, paths/trails, and picnic shelters. There is one neighborhood park owned by the City of Durham within the study area. Generally serving one or two neighborhoods, users typically walk or bike to neighborhood parks rather than driving from some distance away. Birchwood Park is a small 5-acre neighborhood park with sport fields and paths/trails. Currently in the master planning phase of development, Bethesda Park is close to 20 acres in size. Recognizing the need for more recreational facilities in the southeast part of Durham, the Parks and Recreation Department has made the acquisition of 20-40 acres for a community size park a high priority when future bond funds become available. In addition, land at Falls Lake in this study may be available for sublease to the City of Durham.

2. Trails and Greenways

Greenways are typically narrow strips of land along creeks that provide trails for walking and bicycling. The trails and greenways system in Durham is planned to connect schools, parks, and shopping centers. Land acquisition is ongoing for the Little Lick Creek and Lick Creek Greenway System. In addition to land along the main channel of Little Lick Creek, the planned greenway system consists of Panther Creek Trail, Chunky Pipe Creek Trail, Twin Lakes Trail, and Birchwood Trail (See Map 6, Park Facilities and Trails). The Little Lick Creek Greenway will connect the Birchwood Heights neighborhood and Birchwood Park with Twin Lakes Park and the Mineral Springs Shopping Center. As proposed, the Lick Creek Greenway will begin near US 70 and Sherron Road and will follow the creek northeastward, through the Lick Creek Natural Area, crossing Highway 98 between Southview and Coley Roads. These trails will eventually provide a transportation route and recreational opportunity for southeast and northeast Durham residents.

Funding for the acquisition of land comes from the 1996 bonds, impact fees, and payment-in-lieu funds. Impact fees are collected by the City of Durham as a one-time charge on new developments for open space, recreation, and transportation. Dedication of land for recreation or payment-in-lieu of dedication is required through Durham's current ordinance regulating the subdivision of land for new residential development.

Rolling View State Recreation Area, situated at the mouth of Lick Creek, is one of a number of recreation areas on Falls Lake managed by the North Carolina Division of Parks and Recreation on land leased from the United States Army Corps of Engineers. Rolling View offers 80 campsites with water and electric hookups for RV's and 35 campsites for tents and trailers. Campsites include picnic tables, outdoor grills, and tent pads. In addition, this recreation area provides boat ramps as well as picnic shelters and a sandy swimming beach. Group camping facilities accommodating up to 30 people and a lakeside community building

providing a meeting room, kitchen facilities, and restrooms can both be reserved. A privately managed concession near Rolling View offers boat launching, slips and mooring, and a snack bar, equipment rental, supplies, and gasoline.

3. Mountains-to-Sea Trail

As the name implies, the Mountains-to-Sea Trail (MST) will eventually span the distance between Murphy and Manteo. This monumental effort gets support from the North Carolina Division of Parks and Recreation with implementation primarily through enthusiastic volunteers and local governments.

Although the MST has not been built through Durham County, a proposed 25 mile route along Falls Lake within property owned by the Corps of Engineers has been flagged by the Friends of the Mountains-to-Sea Trail volunteers. The Corps of Engineers is interested in working with Durham to ensure the eventual construction and long term management of this trail.

I. Land Use

1. Existing Land Use

The majority of the land in the east Durham drainage basins watersheds remains rural and largely undeveloped with 69 percent of the land use in recreation and open space, agriculture, and undeveloped categories. Most of these areas are located in the eastern portion of the watersheds and include the Falls Lake game lands as well as areas without sanitary sewer and water utilities. The landscape in the western portion of these watersheds is transitioning toward more suburban/urban uses and constitutes the majority of the remaining residential, commercial and office, and institutional categories (See Table 1, Existing Land Use).

2. Zoning

Zoning is the set of rules and procedures that describe how a property may be used by its owner. Durham has nearly 20 different zoning districts, each with its own regulations pertaining to uses that are allowed, building setbacks and heights, and minimum lot sizes. Additional requirements or performance standards are also specified for many individual uses. The current zoning for the East Durham watersheds is shown in Table 2, Current Zoning. The majority of the area is zoned for rural and low density residential uses, accounting for 73 and 19 percent of the total, respectively. The Rural District allows agricultural and the lowest density residential uses. In addition, various community services, such as churches, schools, parks, family care homes, and conference centers are also allowed in this district (See Map 7, Zoning, Generalized). Only a small portion of the area is zoned for commercial, office or industrial uses.

Table 2, Existing Land Use

Land Use Designation	Existing Development, Acres	Existing Development, Percent
Recreation and Open Space	8,114	24%
Agricultural	11,353	33%
Residential	8,973	26%
Commercial and Office	431	1%
Institutional	794	2%
Industrial	114	--
Undeveloped	4,190	12%
Total	**33,969**	**98%**

Note: Source is Durham County tax records.

3. Watershed Protection Zoning Districts

In addition to these zoning classifications, Durham applies zoning rules for the protection of water supplies. Falls Lake is the primary water supply for the City of Raleigh so a portion of the watersheds of Lick, Little Lick, Panther, and Laurel Creeks lie within Watershed Protection Districts A and B. These regulations keep the intensity of development relatively low in order to prevent pollution of the lake (See Map 8, Watershed Protection Districts).

Table 3, Current Zoning

Zoning District	Size, Acres	Percent
Rural District (RD)	25,429	73%
Low Density Residential Districts (R-20, R-15, R-10,and PDRs)	6,564	19%
Medium Density Residential Districts (R-8, R-5, and R-3)	1,133	3%
High Density Residential Districts (RM-8, RM-12, and RM-20)	135	--
Commercial Districts(CT,NC, SC, and GC)	506	1%
Office Districts (OI-1 and Oi-2)	24	--
Industrial Districts (I-1, I-2, and I-3)	893	3%
Total	**34,683**	**99%**

Note: Source is Durham City-County Planning Department.

The Falls Lake Critical Area (F/J-A) includes the land generally within one mile of the reservoir and is the most restrictive for development. Non-residential uses are only permitted in this area if the land was zoned for such uses prior to September 1992. Residential lot

size must be a minimum of one to two acres, and impervious surface is restricted depending on the density of the development.

The Falls Lake Protected Area (F/J-B) includes the land between one and five miles from the reservoir and has fewer restrictions on development. Industrial, commercial, and office uses are permitted in this district, and the minimum lot size for residential development ranges from approximately one half acre to two acres. Although there are limits on impervious surface in this district, the limits are significantly less restrictive. It is important to note that both districts require the preservation of undisturbed vegetated buffers of 50 to 150 feet along each side of intermittent and perennial streams. Preserving vegetated buffers is the most cost-effective way to help protect the quality of our surface waters.

4. Urban Growth Area

Established as a tool to manage growth, Durham's Urban Growth Area (UGA) boundary dramatically impacts the character of development found within the East Durham watersheds. The UGA boundary was drawn in eastern Durham County primarily to protect Falls Lake. With the exception of extensions to schools, industries, and properties with existing health hazards from failing wells or septic systems, the urban growth policy prohibits the extension of public water and sanitary sewer utilities outside of the UGA boundary. As a result, those portions of the Lick, Little Lick, Panther, and Laurel Creeks watersheds that are within the UGA will experience relatively dense residential development whereas residential development outside of this boundary will have larger lots of sufficient acreage to locate a well and septic drain field (See Map 9, Urban Growth Area Boundary).

The Little Lick Creek watershed within the UGA has been experiencing the transition from rural to suburban since the late 1980's. Encompassing over 400 acres to the north and south of Highway 98 and east of Mineral Springs Road, Grove Park was one of the first large developments in this area consisting of approximately 800 residential units as well as a 40-acre lake. The Crossings Golf Club is located within this development to the north of Highway 98. More recent developments along Mineral Springs and Carpenter Fletcher Roads include Stone Hill, Ridgewood, Ridgefield, Cardinal Lake, and Panther Creek. Gatewood Forest on Freeman Road and Marbry Landing on Stallings Road are also relatively recent subdivisions. Ravenstone Commons Shopping Center has recently been constructed on the south side of NC 98. In addition, there are a number of tracts with pending re-zoning applications from a rural designation to zoning that will allow higher density residential development.

J. The Durham Comprehensive Plan

In early 2005, the City Council and the Board of Commissioners adopted the Durham Comprehensive Plan. The Plan provides a guide for the growth and development of the Durham community. It offers a vision, goals, objectives, and policies that allow Durham to more

effectively manage change over the next two decades. The Plan's Future Land Use Plan provides a desired pattern of land use for citizens, appointed officials and governing boards. The Plan's public facility elements set level of service standards and provide a framework for the expansion of public infrastructure to accommodate the expected future population.

1. Tiers and the Urban Growth Area Boundary

The Durham Comprehensive Plan establishes a series of five development Tiers (Rural, Suburban, Urban, Compact Neighborhood, and Downtown) to guide growth and development in distinctive parts of the community. According to the Future Land Use Map of the Plan, the Lick, Little Lick, Panther Creek study area is found entirely within the Rural and Suburban Tiers. The Map also shows extensive natural resource areas in east Durham, covering public open space, parks and floodplains.

Established as a tool to manage growth, the Urban Growth Area (UGA) forms the boundary between the Suburban and Rural Tiers. The Rural Tier is established to provide sufficient land for agricultural, rural residential, small-scale commercial and industrial purposes. The Suburban Tier includes all land within the UGA that is not included in the Urban, Compact Neighborhood, or Downtown Tiers. The Suburban Tier ensures sufficient land for residential, commercial, institutional, office, research, and industrial purposes.

Durham's UGA boundary dramatically impacts the character of development found within the East Durham watersheds. The UGA boundary was drawn in eastern Durham County primarily to protect Falls Lake. With the exception of extensions to schools, industries, and properties with existing health hazards from failing wells or septic systems, the urban growth policy prohibits the extension of public water and sanitary sewer utilities outside of the UGA boundary. As a result, those portions of the Lick, Little Lick, Panther, and Laurel Creeks watersheds that are within the UGA will experience relatively dense residential development whereas residential development outside of this boundary will have larger lots of sufficient acreage to locate a well and septic drain field (See Map 9, Tiers and the UGA Boundary).

2. Proposed Future Land Uses

Approximately 71 percent of the proposed future land uses in the Lick and Little Lick Creek area, as defined by the Durham Comprehensive Plan, includes a range of residential designations from rural to medium densities. Recreation and open space comprise the majority of the remaining future land use with 23 percent in this category. Commercial, industrial, and institutional land uses, combined, account for 5 percent of the future land use (See Table 3, Proposed Future Land Uses).

3. Roads

Lick and Little Lick Creeks flow from west to east with the watersheds of both of these creeks bisected by NC 98. According to the 2025 Long Range Transportation Plan, NC 98 will continue to be the major east-west thoroughfare through southeast Durham. Current north to south thoroughfares consist of Mineral Springs Road and Sherron/Patterson Roads. The 2025 Long Range Transportation Plan extends Olive Branch Road south to Highway 70 in Wake County and changes its northern alignment to connect with Baptist Road, providing another north-south thoroughfare.

Construction of the North Durham Parkway is a priority for the City and County with funding provided by the Highway Trust Fund. The southern end of this major north-south thoroughfare will connect with Highway 70 at the Wake County line. This new road will generally follow a northwest alignment, cross I-85 near Glenn Road, and terminate at US 501 just north of Snow Hill Road. As planned, the North Durham Parkway will cross Highway 98 at Mineral Springs Road (FY 2004-2010 Metropolitan Transportation Improvement Program).

Table 4, Proposed Future Land Uses

Land Use Designations	Proposed Development, Acres	Proposed Development, Percent
Rural Density Residential (0.5 dwellings units per acre or less)	7,411	21%
Very Low Density Residential (2 dwelling units per acre or less)	8,185	24%
Low Density Residential (4 dwelling units per acre or less)	4,944	14%
Low-Medium Density Residential (4-8 dwelling units per acre)	3,470	10%
Medium Density Residential (6-12 dwelling units per acre)	584	2%
Commercial	631	2%
Office	61	--
Institutional	268	1%
Industrial	843	2%
Recreation and Open Space	8,286	23%
Total	34,683	99%

Note: Source is Durham Comprehensive Plan, Adopted February 28, 2005.

K. Summary of Issues

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1.
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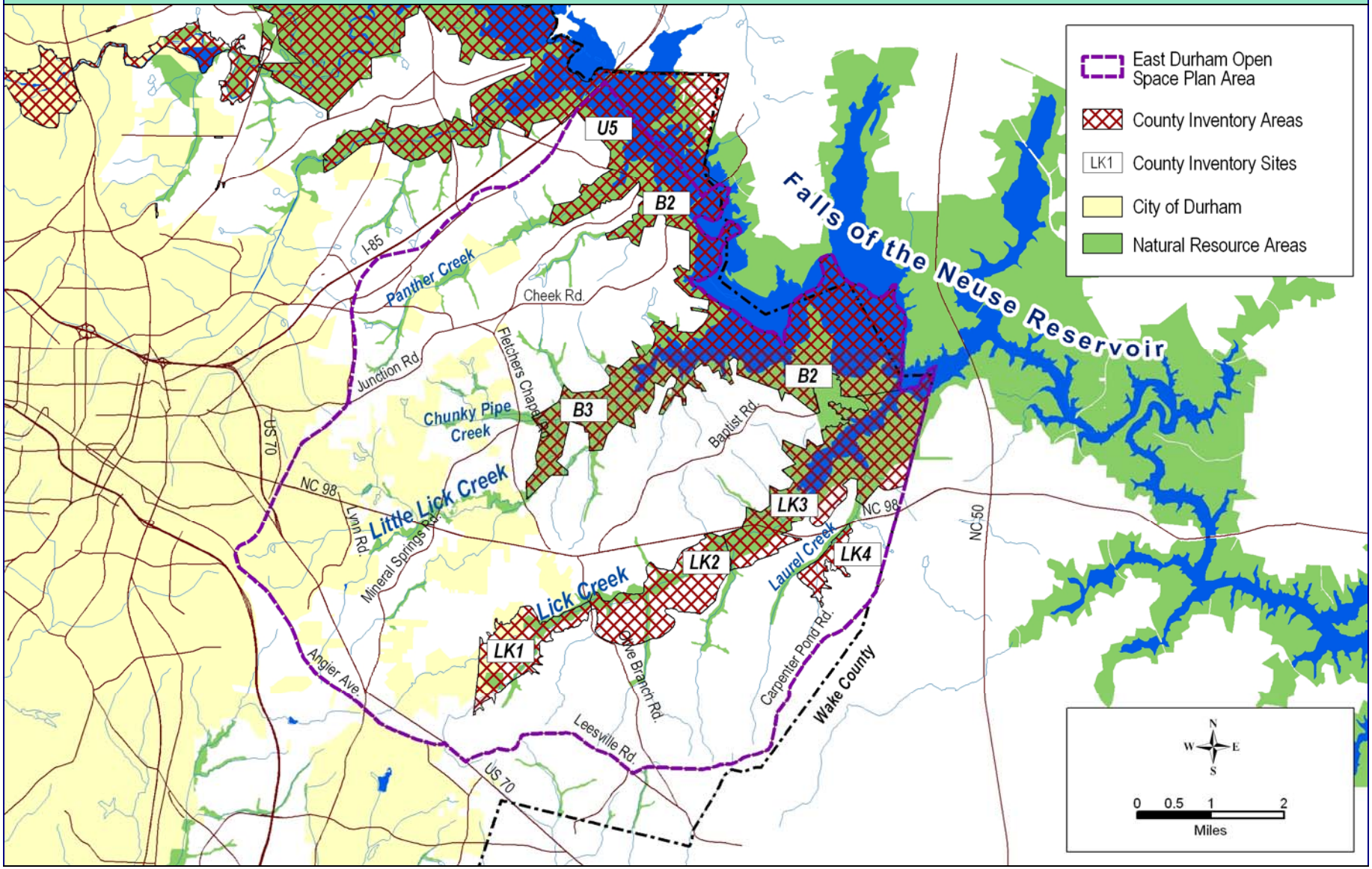
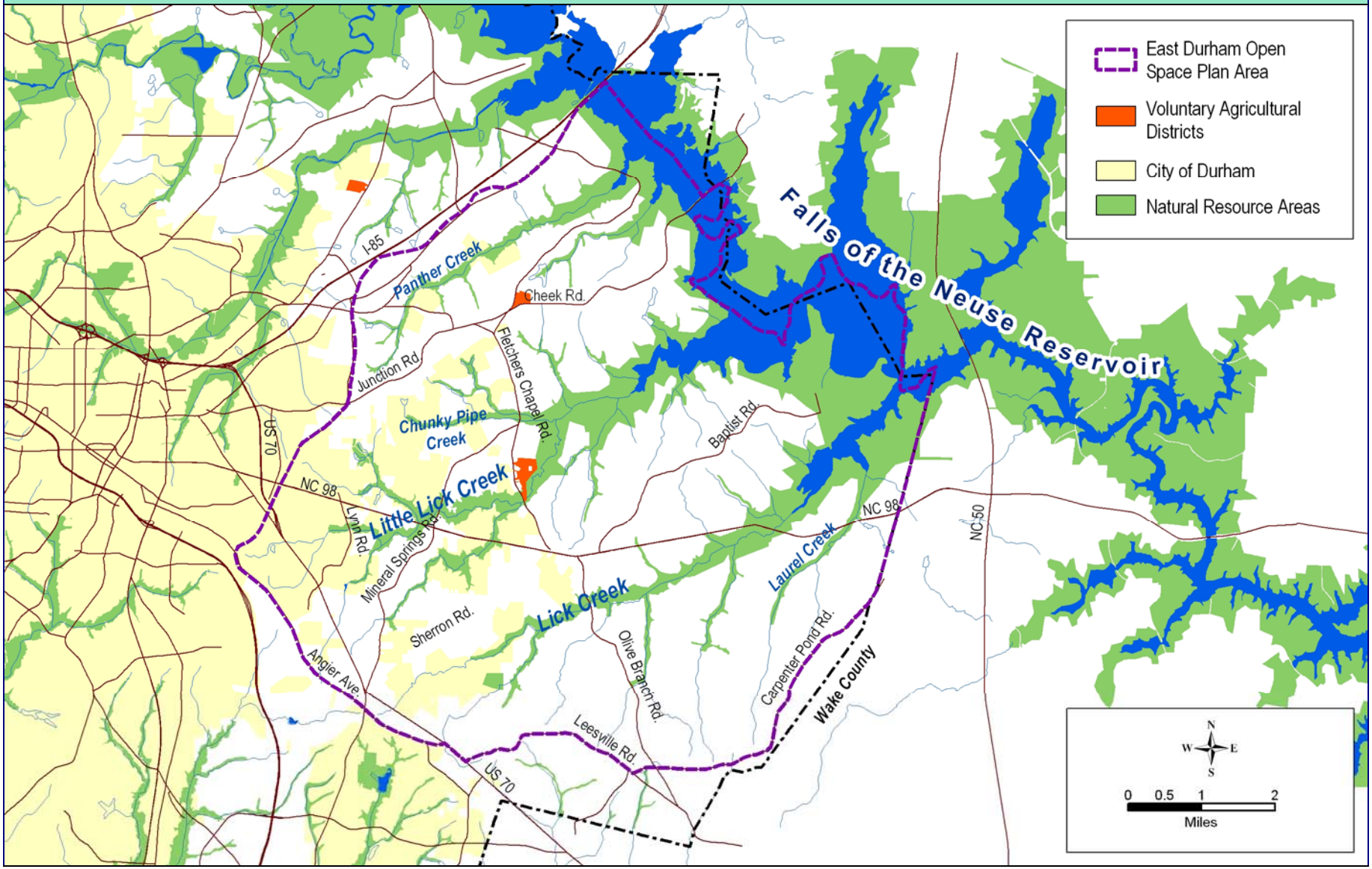
6.

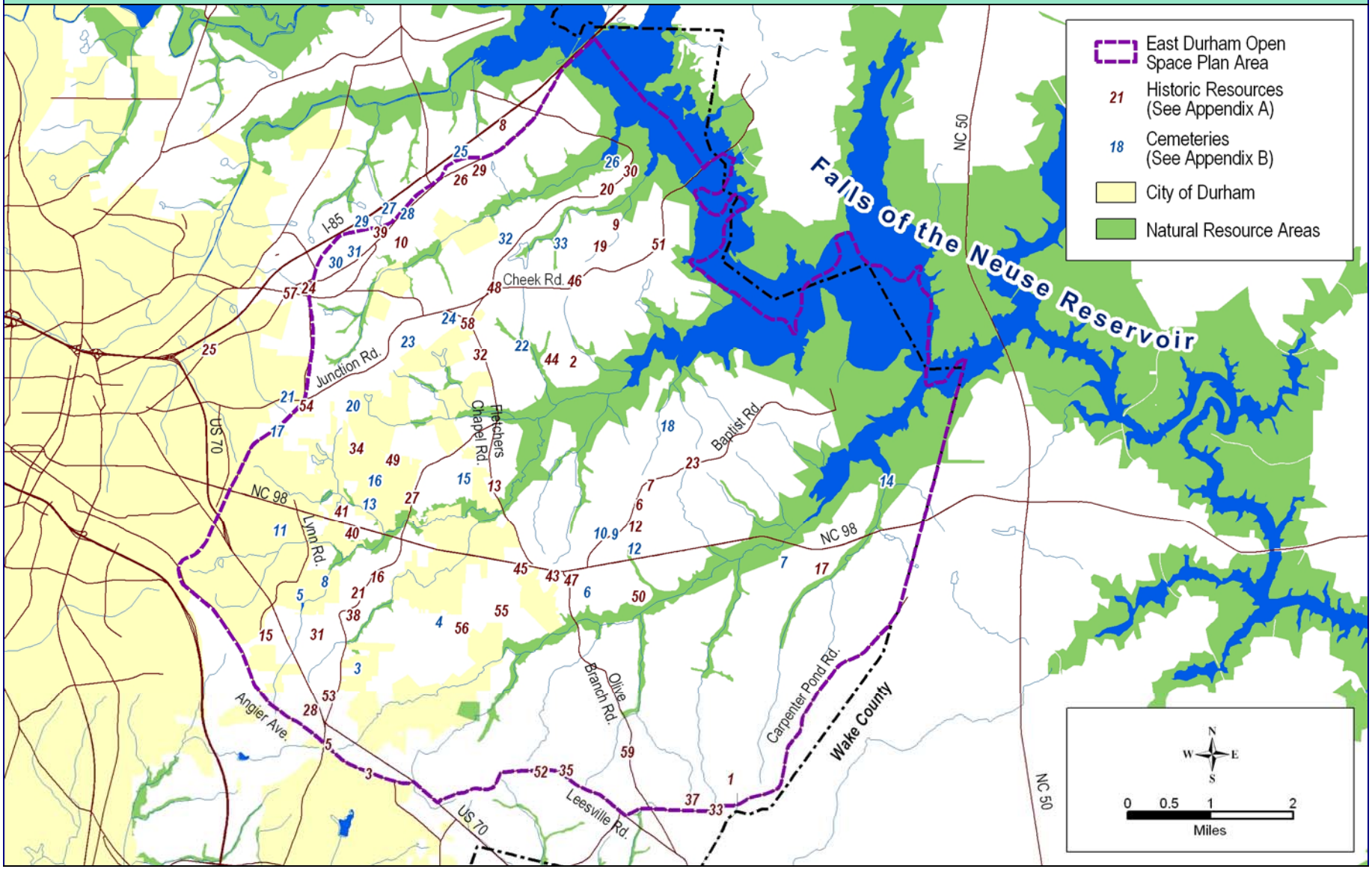
Map 3, Natural Heritage Inventory Sites



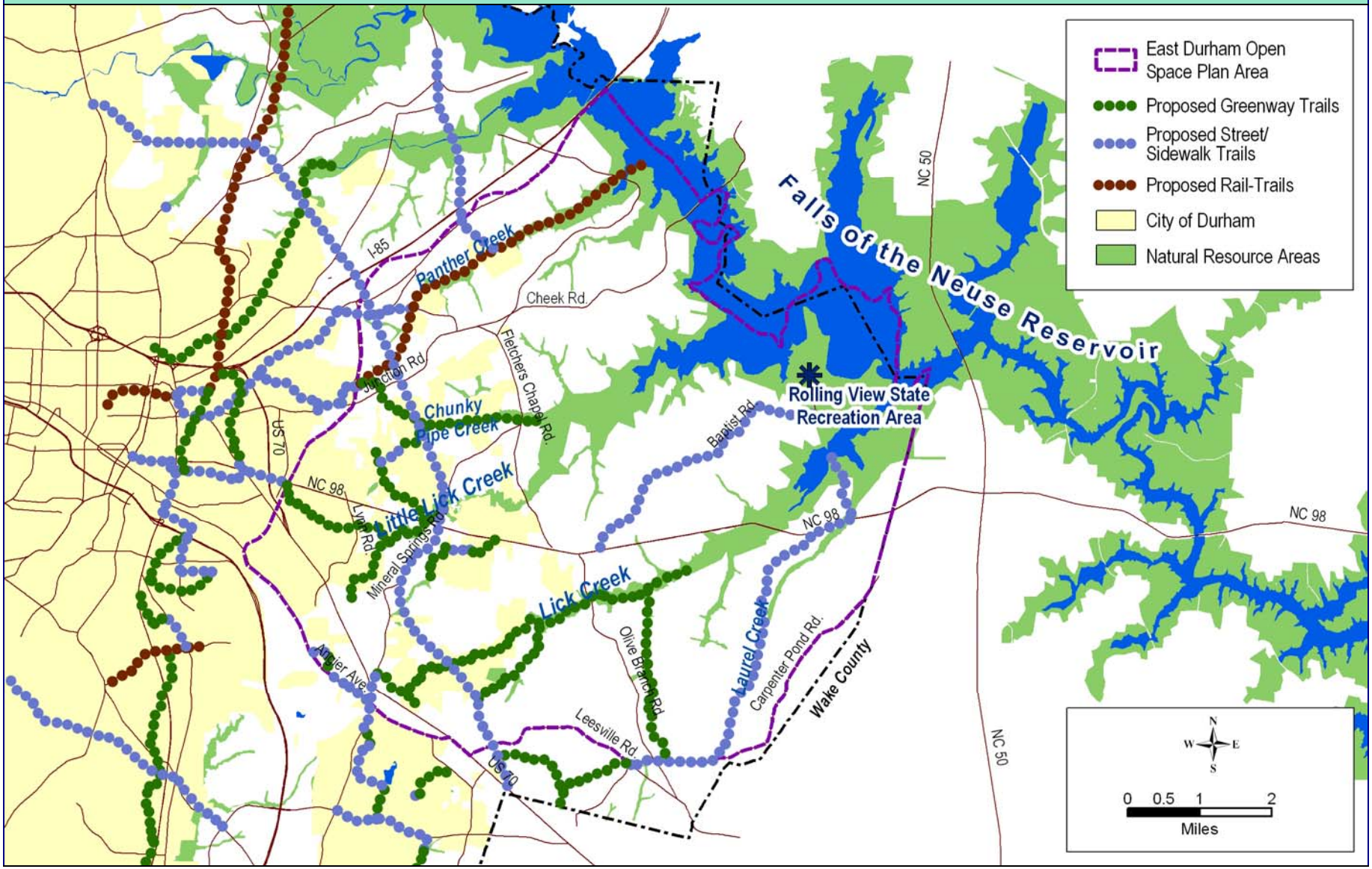
Map 4, Farmland Preservation



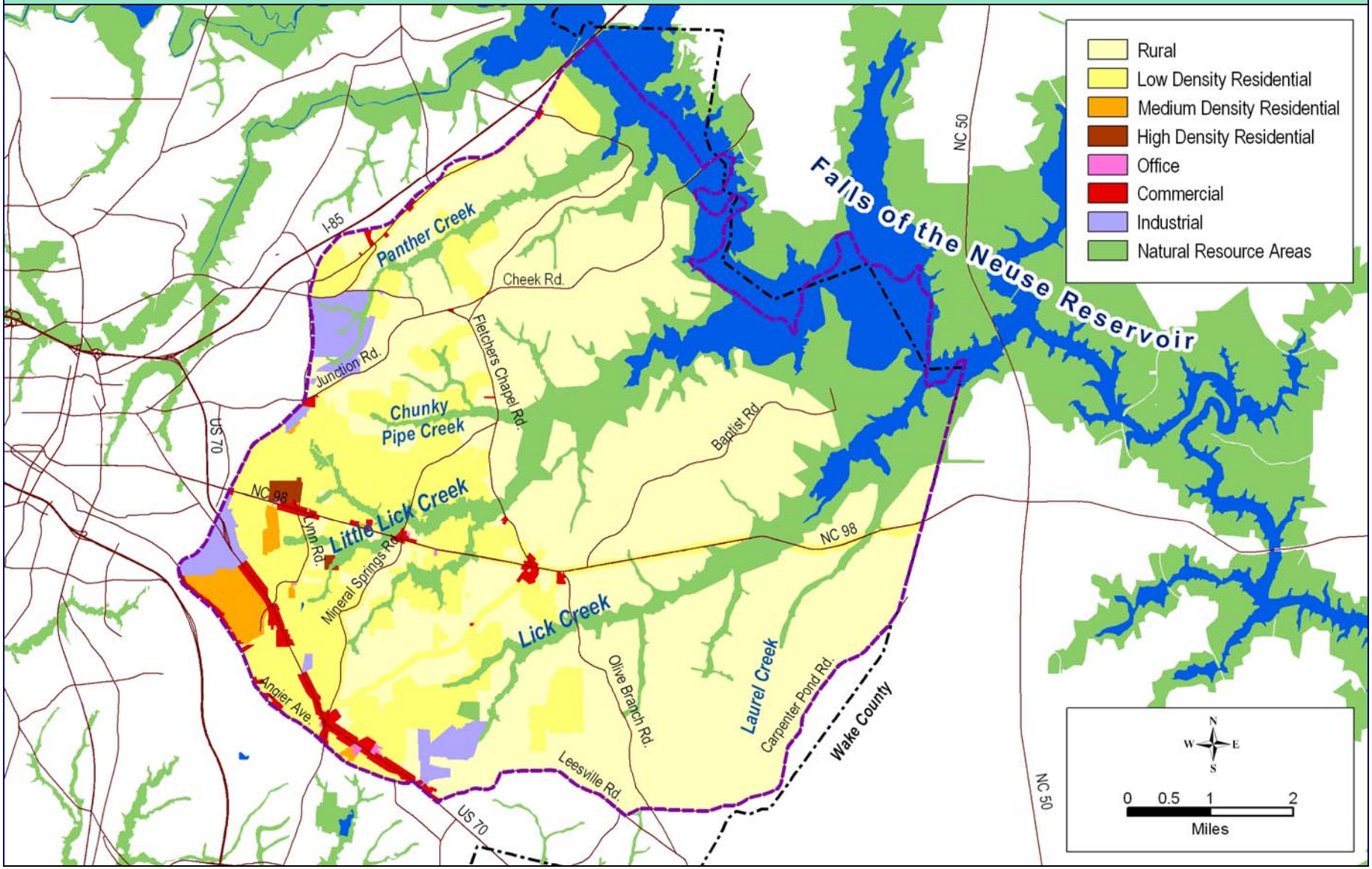
Map 5, Historic Resources and Cemeteries



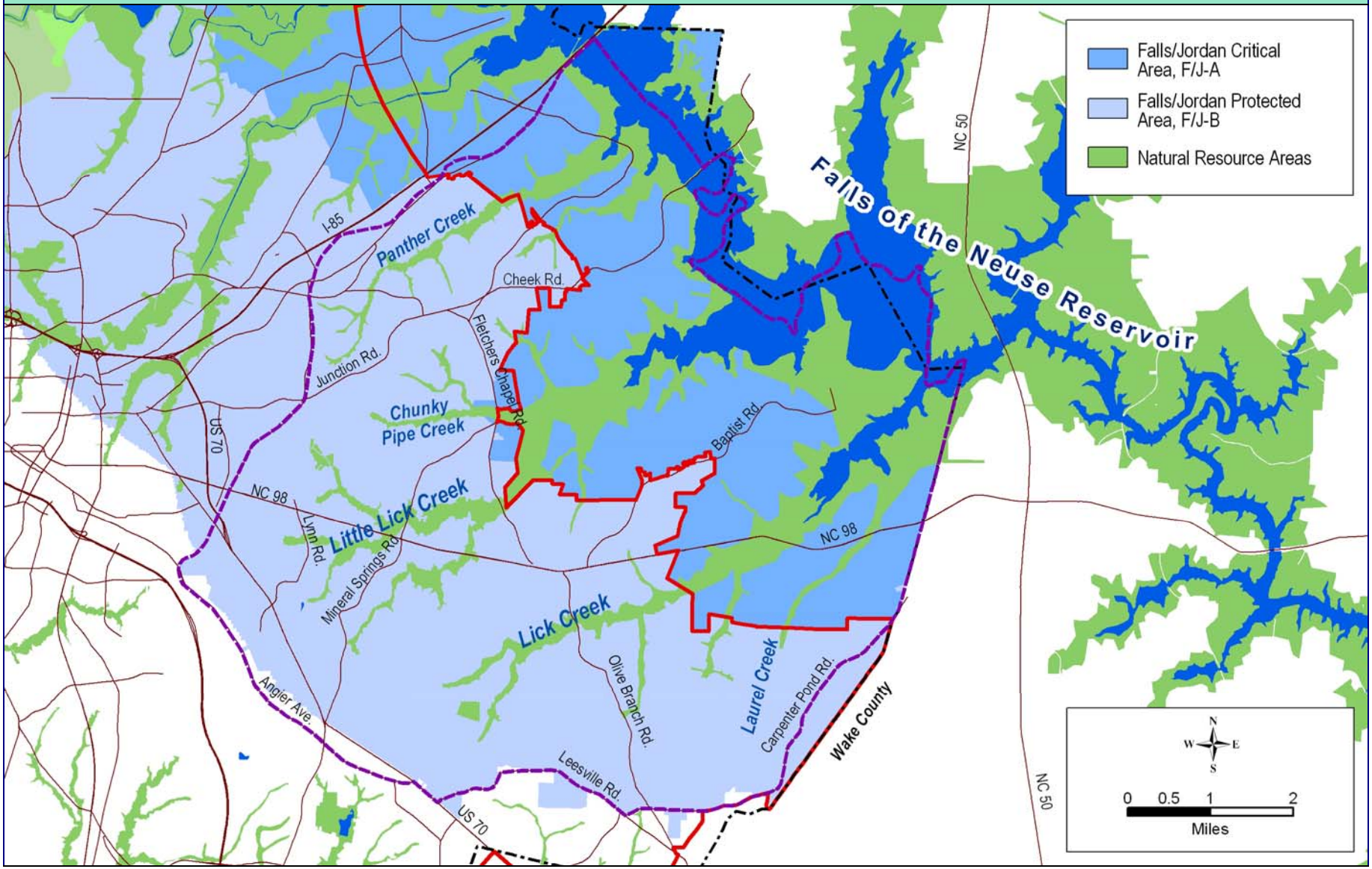
Map 6, Park Facilities and Trails



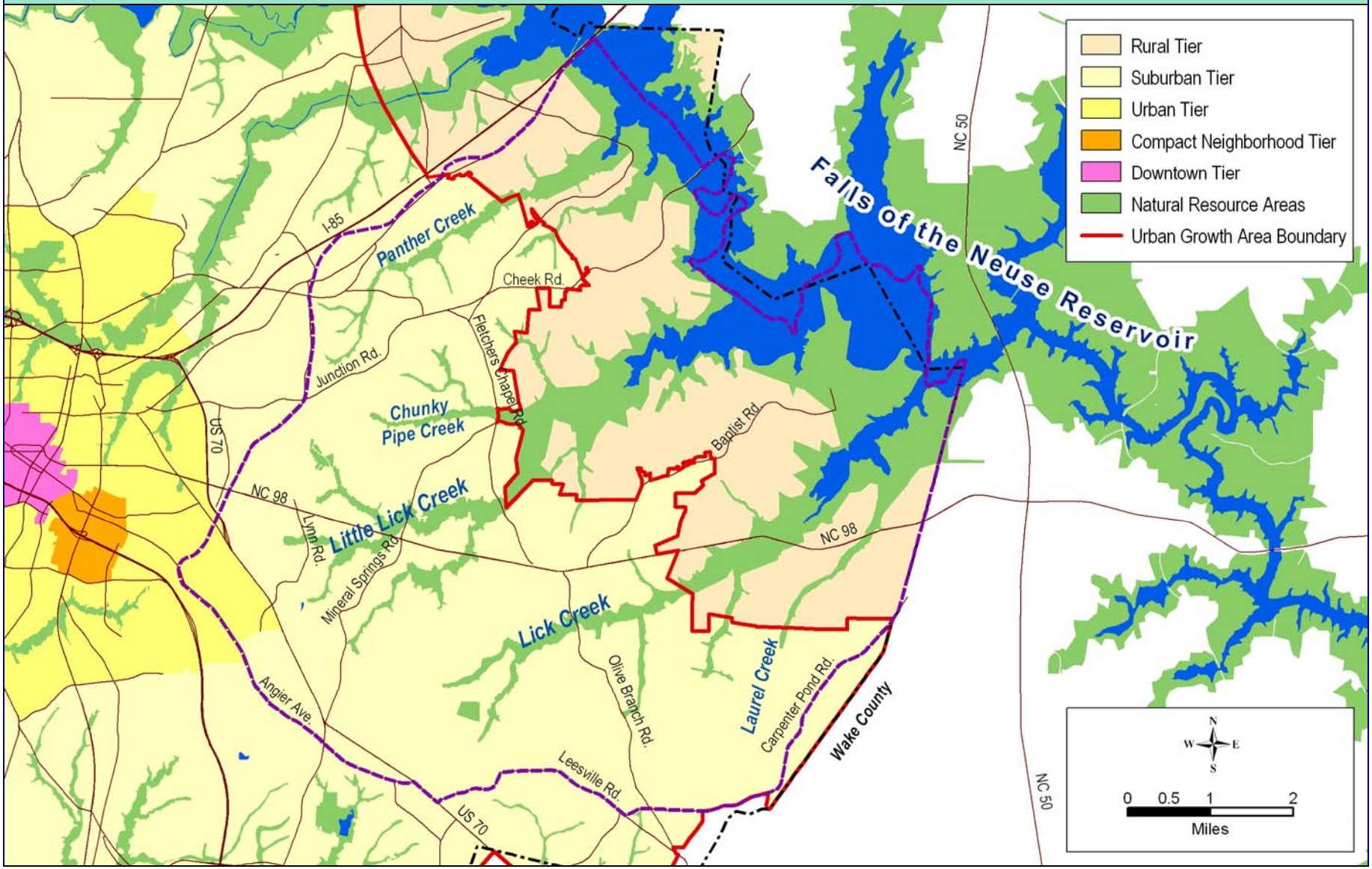
Map 7, Zoning, Generalized



Map 8, Watershed Protection Districts



Map 9, Tiers and the UGA Boundary



III. Open Space Vision and Goals

A. The Vision

B. Goals

1. Historic Preservation
2. Recreation
3. Water Quality
4. Habitat Protection
5. Natural Beauty
6. Others…?

IV. Implementing the Plan

A.

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B.

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C.

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V. Appendices

Appendix A. Historic Resources

1. **Adams-Black House.** Colley Rd. No description.

2. **John T. Allen House.** Rogers Rd. No description.

8. **Angier Ave. Houses.** Angier Ave. No description.

12. **Angier Ave. Houses (N. side).** Angier Ave. No description.

18. **Dewitt Bailey Tenant Farm.** South Miami Blvd. Small 1920's tenant farm complex, perhaps built by Bethesda landowner Dewitt Bailey. The farm contains a small one-story front gable frame house and three log farm buildings.

19. **Baptist Road House.** Baptist Rd. This dwelling retains certain features that date it to the fourth quarter of the nineteenth century. Its main block displays a gable sided roof configuration rather than the tri-gable pattern which later became typical. Exterior end chimneys have stacks and shoulders of coursed fieldstone. The wing at the end of the ell exhibits unusual saw tooth patterned siding in the gables and the ghost mark of an attic window under the eaves. Except where openings have been sized down to fit modern replacements, windows consist of six-over-six, double-hung sash.

20. **Baptist Road Old House.** Baptist Rd. Edward Carpenter built this two-story tri-gable house as a residence on his farm. The architecture is typical of the two-story farmhouses built in Durham County around the beginning of the twentieth century. It has the characteristic three-bay façade and follows the pattern as seen in later frame residences in which a single exterior end chimney occupies a blank end wall. The porch wraps around one end and has a shallow hipped roof. The original windows consist of two-over-two double-hung sash.

320. **Fendol Bevers House.** Leesville Rd. Standing over a fieldstone foundation, the house has an archetypal elongated form, a low hip roof, and end chimneys with squared stone bases, a feature not commonly found in Durham County. Fenestration is regular, and windows, six-over-nine on the first floor and six-over-six on the second floor have four-part surrounds ornamented with plain corner blocks.

52. **Cleveland Bragg House.** Geer St. No description.

56. **Dr. John Bullock House.** Bullock Rd. Circa 1920. John Bullock, a veterinarian, built this house to serve as his family's home as well as his business office. His widow remained in the house until the middle 1970's. The house is a story and a half with an attached single story rear ell.

62. **Edward Carpenter House.** Baptist Rd. No description.

63. **H. O. Carpenter House and Store.** The circa 1920 house consists of a one story gable sided frame structure with full width rear shed attached. The simple façade is made up of a single-leaf entrance door, flanked by paired windows. Plain weatherboards make up the exterior of the dwelling. The store building is a gable front structure sheltered by a gable entrance porch that is finished with vertical board-and-batten siding. Six-over-six double-hung sash windows are found in the main portion as well as the full-length side shed.

71. **Chandler House.** Stallings Rd. The exterior of the house has been altered and covered with artificial siding, but it retains stately proportions and a large double-shouldered exterior end chimney on the north façade. Important interior details were preserved during the renovation. The house has its original hall-parlor plan and a very fine mantel in the parlor. An enclosed corner stair accesses the second level, which retains wide flush-board paneling and another handsome early mantel.

72. **James Chandler House.** Baptist Rd. No description.

75. **Choplin House.** Pleasant Drive. No description.

77. **Clark Farm.** Mineral Springs Rd. Circa 1900. This typical one-story tri-gable farmhouse still retains one exterior end fieldstone chimney. The interior center hall plan has some intact late Victorian trim, including mantels, doors, and door and window trim. The property where this house sits was probably formerly a dairy farm.

53. **Colclough-Bragg House.** Creech Rd. No description.

88. **Millard Colley House.** Colley Rd. No description.

95. **Copley Log House.** Geer St. No description.

110. **James W. Creech, Sr. House.** Redwood Rd. The late nineteenth century Creech home was originally a log house with an engaged porch. This log portion of the house has subsequently been covered with weatherboards and also has an addition.

109. **James W. Creech, Jr. House.** Creech Rd. This single story tri-gable house was built by James W. Creech, Jr. around 1917. A distinguishing feature is the use of paired windows on either side of the entrance. The hipped roof porch has four full-length square columns with two half-columns attached to the walls of the house.

111. **Cress House.** Mineral Springs Rd. No description.

133. **Ferrell House.** Fletchers Chapel Rd. This center-chimney frame dwelling consists of a one-and-a-half story main section with a full-width rear shed and a one story wing that have been added. A shed roofed front porch shelters the three-bay façade. Square porch columns are made up of plain boards nailed together. Four-over-four and six-over-six double-hung windows are set in plain surrounds.

134. Edgar Lee Ferrell House. Baptist Rd. A stately grove of mature oaks surrounds the well-proportioned Triple-A I-house constructed by farmer Edgar Lee Ferrell ca. 1901. The frame dwelling is classic with its three bay façade, regularly placed four-over-four windows and single shouldered brick end chimneys. More unusual are decorative shingles on the center gable, and shed-roofed front porch with slender tapered box-columned supports. Interior finishes are largely obscured by modern wall coverings and ceiling tile but turned newels and balusters and bracketed mantels remain in place.

154. East Geer Street Bungalow. Geer St. No description.

155. Geer Street Houses. North and South side of Geer St. No description

156. Geer Street Stores. Geer St. No description.

162. Gooch House. Gooch Rd. This turn-of-the-century farmhouse is located at the end of a long dirt road and is so well screened it can only be seen in the winter. The house consists of a single-pile main block with a short ell added to the rear. The hipped roof porch displays full-length tapered square columns and wraps around the front end of the house and runs alongside the ell.

186. Dr. William Norwood Hicks Farm. Mineral Springs Rd. This structure is well preserved; it rests on brick and fieldstone piers with brick infill, has much original weatherboard siding, and six-over-six windows that retain many early panes. A hip-roofed front porch with narrow paired posts is a late 19th century replacement. A one-story ell extended to the rear has an enclosed porch.

196. Holloway House. Geer St. No description.

199. Joe Holloway House. Redwood Rd. Architectural details of this ornate circa 1885 farmhouse include paired eve brackets, a paneled frieze board, a double-leaf entry door with rounded glazed panels, pedimented door and window surrounds, ornate porch columns, and a porch balustrade with turned spindles.

187. Highway 70 Houses, Bethesda. West side US 70. Five 1920's Craftsman style houses are all that remains of the community of Bethesda on US 70. These houses are typical of the houses built elsewhere in Bethesda during its development in the 1920's.

204. Horseshoe Road House. Horseshoe Road. This early 20th century farmhouse is a much-altered frame I-house, three-bays wide with a long 1-story rear ell. It was apparently the main house for a large farm in this vicinity prior to the creation of a 1960's subdivision around the house.

209. Husketh House. Fletchers Chapel Rd. No description.

215. Jones House. Carpenter Pond Rd. Exterior end chimneys have corbelled caps; the roof has patterned metal shingles; a frieze board beneath the eaves is paneled; and a prominent center gable has rows of decorative shingles and a circular vent with a sawn work rosette. The interior is ornate: machine-made mantels are different in each room; narrow beaded board wainscoting and siding cover walls; and turned balusters and an elegant newel with a ball finial line the stairs.

216. Jones House. Clayton Rd. Although it is now surrounded by new residential subdivisions, this circa 1900 pyramidal cottage occupies a prominent site at the intersection of Clayton and Junction Roads. It retains original tall interior brick chimneys but has vinyl siding, a replacement porch and replacement front door.

230. Leesville Road Bungalow. Leesville Rd. No description.

248. Marley & Peyton Road Houses. Marley & Peyton Rd. No description.

249. Martin Family House. Virgil Rd. A shingled center gable adds decoration to a handsome turn-of-the-20th century Triple-A I-house, archetypal in its two-story, one room deep form. In a common pattern, the dwelling is frame, has a three bay entry façade, a hip roof front porch, single-shouldered brick end chimneys, a one story rear ell, and is part of a small farmstead.

250. Mason House. Mineral Springs Rd. This tri-gable I-house was probably the seat of the farm in the late 19th century. Although the exterior has been greatly altered, the house still retains its original six-over-six window sash.

276. Fred Myers House. Beck Rd. This circa 1920 largely unaltered Bungalow style house is unique because of its rural location. While many Bungalow style houses were built in the early twentieth century neighborhoods of Durham, few were built in the countryside.

268. NC 98 House, Dirt Lane. NC 98. Circa 1900. This much-altered, dilapidated house occupies a lovely hilltop site south of NC 98. It is comprised of two small houses side by side. One is an L-shaped cottage with one interior brick chimney and one exterior end stone chimney, and four-over-four and six-over-six sash windows. The other is a tiny side-gabled house.

269. NC 98 and Breedlove House. NC 98 and Breedlove. This substantial 1920s frame bungalow, with a deep engaged front porch, large front dormer window, German siding and nine-over-nine Craftsman style sash, sits on a knoll above NC 98, with its vista now partially blocked by a brick ranch built closer to the highway in front of it. It was probably built as a farmhouse.

277. Neuse River Baptist Church. Cheek Rd. Circa 1937. This gabled church incorporates the shape of the cross whereby at the peak of the gabled façade, a small square tower serves as the base of the cross. The weatherboard exterior is accentuated by six-over-six windows. The double-leaf entrance door has six flat panels beneath a transom having five panels.

272. Nichols House. Wake Forest Highway. No description.

273. Doc Nichols House. Wake Forest Highway. As originally constructed, the house consisted of a massive main block, rectangular in plan, with a rear ell and small doctor's office attached. The later porch diminishes the visual effect of the characteristic central dormer. The elaborate pedimented entrance dates from period of mid-20th century remodeling carried out by Mr. Glover.

274. John Nichols House. Rogers Rd. An unusual house type for Durham County, the frame one-and-half story cottage thought to have been built ca. 1812 by John Nichols, has been in his family-by-marriage for almost 185 years. A broad gable roof notable for prominent dormers, shelters an engaged front porch and a full width rear shed thought to be original to the house. The interior of the house has a hall-parlor plan, and retains much early fabric that includes wide-board flush sheathing, paneled wainscoting, beaded ceiling joists, and one paneled mantel.

275. O.B. Nichols House. Wake Forest Highway. The house consists of an older portion dating from the turn-of-the-century with recent additions that have been made in stages. The façade differs from the traditional Piedmont three-bay pattern in its use of paired windows flanking the entrance. Also of note is the rectangular window found in the central gable.

282. Olive Branch Baptist Church. Olive Branch Rd. The Olive Branch Church is built over a raised basement in the shape of a cross; from central block with a pyramid roof, a pedimented entry portal extends north, identical pedimented gable-roofed wings extend east and west, and a hip-roofed wing extends south. The basement is concrete, exterior walls above it are brick veneer laid in a running bond over a single soldier course, and gable-end pediments are stuccoed beneath artificial siding.

301. Pendergraft House. Cheek Rd. Distinguishing this tri-gable farmhouse is the detail of the central gable consisting of alternating saw tooth rows of butt-edge shingles in a variety of shapes. Four-over-four, double-hung windows are set in post and lintel frames, and the hipped roof of the wraparound front porch is supported by full length square columns.

303. Penny Family House. Freeman Rd. The early 19th century frame one-and-a-half story cottage, said to have been built for the Penny Family, has been moved from a location near the Wake County line and restored. The broad gable roof, prominent dormers, and engaged porch are typical of the Georgian and Federal style cottages of eastern North Carolina. The six panel front door appears to be original although other exterior fabric, including beaded weatherboard siding, chamfered porch posts, six-over-nine and four-over-six windows and foundation piers are new. Chimneys, no doubt at one or both gable ends of the earlier house, have been omitted in the restoration, and a new ell has been added at the rear.

305. Perry House. Kemp Rd. No description.

313. Pollard House. Cheek Rd. This late nineteenth century tri-gable house has architectural details of generous proportions. The molded eaves of the relatively tall gables project strongly. The molded, peaked window lintels and double leaf entrance door have ornamental appliqué. The hip-roofed front porch incorporates full-length tapered square columns.

324. Rich-Yates House. Mineral Springs Rd. Circa 1900. This 1-story frame side gabled farmhouse with the original brick chimney, turned porch posts that may be original; the two-over-two window sash is typical for the turn-of-the-century. A gable front smokehouse of round logs stands to the side. The house is said to have been lived in by the Rich family and later by the Yates family.

338. Ross Primitive Baptist Church. Cheek Rd. Circa 1900. Small gable-front frame church facing the junction of Cheek and Junction Roads. The church is significant as one of a small number of historic Primitive Baptist churches surviving in Durham County. The plain exterior with no steeple is typical of 19th century churches of this denomination.

350. Brantley Sherron House. Sherron Rd. No description.

351. Claude Sherron House. Holder Rd. No description.

367. Suggs Grocery. Geer St. No description.

368. Suitt House. Fletchers Chapel Rd. No description.

417. Wilkerson House. Olive Branch Rd. No description.

Note: Source is the

Appendix B. Cemeteries

1. **Unknown Owner**, Bungalow Ave.
2. **Cemetery**, Carpenter Pond Rd.
3. **Evans Cemetery**, Mineral Springs Rd.
4. **Hopson Cemetery**, Plantation Rd.
5. **Barnes Realty and Construction**, Lynn Rd.
6. **Unknown Owner**, Olive Branch Rd.
7. **Gullie Cemetery and Fannie Coley Storms**, Old Rd.
8 **Lynn Cemetery**, Lynn Rd.
9. **Rogers Grove Church Trustees**, Baptist Rd.
10. **Rogers Minnie Parker Heirs**, Baptist Rd.
11. **Holloway Cemetery**, Carr Rd.
12. **Rogers Family Cemetery**, Baptist Rd.
13. **Breedlove Cemetery**, Clayton Rd.
14. **Calvary Baptist Church**, Boyce Mill Rd.
15. **Nichols and Fletcher Cemetery**, Armitage Rd
16. **CCB Trust Company for Fletchers Cemetery**, Clayton Rd.
17. **Frazier Cemetery**, Overhill Rd.
18. **Gooch Cemetery**, Shaw Rd.
19. **Cemetery**. Baptist Rd.
20. **Lunsford Cemetery**, Freeman Rd.
21. **Clover Cemetery**, Junction Rd.
22. **Cemetery /Freeman Elizabeth Carpenter Heirs**, Fletchers Chapel Rd.
23. **Cemetery**, Cheek Rd.
24. **Woodlawn Memorial Gardens, Inc.**, Cheek Rd.
25. **Holloway Cemetery**, Gorman Church Rd.
26. **Creech Cemetery**, Redwood Rd.
27. **Rigsbee Cemetery**, East Geer St.
28. **Rigsbee Cemetery**, East Geer St.
29. **Cemetery**, East Geer St.
30. **Glenn Heirs Cemetery Lot**, Joyner Rd.

31. **Glenn Heirs Cemetery Lot**, Joyner Rd.

32. **Cemetery**, Bragg Rd.

33. **Cemetery**, Redwood Rd.

Note: Source is …

Appendix C. References

1. Durham-Chapel Hill-Carrboro Metropolitan Planning Organization. 2003. 2025 Long Range Transportation Plan.
2. Durham-Chapel Hill-Carrboro Metropolitan Planning Organization. 2003. FY 2004-2010 Metropolitan Transportation Improvement Program. City of Durham, Transportation Division. Durham, NC.
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